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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,870	12/02/2003	Hang Li	81131625(19276)	2760

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EXAMINER	
BAREFORD, KATHERINE A	
ART UNIT	**PAPER NUMBER**
1762	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/725,870	LI ET AL.	
	Examiner	Art Unit	
	Katherine A. Bareford	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) *8-11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-6 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Claims 3 and 7 are canceled

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment of February 8, 2007 (in response to the Notice of Non-Compliant Amendment of January 30, 2007) has been received and entered. With this amendment, claims 3 and 7 are canceled, claims 8-11 are withdrawn and claims 1-2, 4-6 and 12 are pending for examination. The specification has also been amended.

Specification

2. The amendment filed February 8, 2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

In paragraph [0003], "NVH" has been defined as "noise, vibration, and harshness", however, applicant has not provided any support for this amendment or indication as to why this would be the understood term.

Applicant is required to cancel the new matter in the reply to this Office Action.

3. In the amendment of February 8, 2007, applicant argues that the Office Action (September 7, 2007) indicates that the defined term would be acceptable and therefore, the specification has been amended to reinstate the term "noise, vibration, and harshness". The Examiner has reviewed this argument, however, the new matter

objection above is maintained. What the Examiner stated in the Office Action of September 7, 2007 (paragraph 3) was that "While the defined term would be acceptable if a showing was made as to what the "NVH" term meant, applicant's referred to definition was not actually present in the amendment reviewed by the Examiner." Applicant cited a definition taken from "Automotive Technology" which defines the term, however, no copy of the cited document was actually provided, so no showing was actually made.

Claim Objections

4. The objection to claim 1 because of informalities is withdrawn because in claim 1, line 3, "an heat shield" has been changed to "a heat shield" for correct grammatical usage in the amendment of February 8, 2007.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in

the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 4 has been amended as of February 8, 2007 to provide that the composition of the Al-Si is measured by weight percent. Applicant argues that support for this is present in the specification in paragraph [0023]. The Examiner has reviewed paragraph [0023]. While the range of Al-Si 4% to Al-Si 18% is described, there is no indication in that paragraph that the composition is measured in weight percent as no units are given. As to figure 2 of the application, the Al-Si system is referenced by weight and by atomic percent, and as a result, one of ordinary skill in the art would not know if weight or atomic percent was being referred to in the range of claim 4, and therefore, to amend the range to weight percent would be new matter.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-2, 4-6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted state of the prior art in view of Smith (US 2355568), Hartsock et al (US 5530213), Masumoto et al (US 4859252), Kim (US 6206459) and Cremers et al (US 2002/0035456).

The admitted state of the prior art, at paragraphs [0002]-[0005], teaches that it is well known to provide catalytic converters with external heat shields made from sheet metal. The admitted state of the prior art further teaches that these shields provide a significant problem with noise, and to reduce noise it has been known to use metal liners, that are expensive to manufacture and very heavy. As a result, there is a need for an improved vibration damper for heat shields in catalytic converters.

The admitted state of the prior art teaches all the features of these claims except (1) the locating of regions of the heat shield with maximum resonance (highest) vibrations and applying a coating of Al-Si to the heat shield by thermal spraying in the located regions to provide a vibration damping layer, (2) the composition of the Al-Si alloy (claims 4-5), (3) the stainless steel heat shield (claim 6), (4) the securing the heat shield to a catalytic converter in the exhaust system of an engine and running the

engine and locating the regions, and (5) that the locating step includes identifying the regions with a laser vibration scan (claim 2) or sound pressure recording (claim 12).

Smith teaches a method for vibration damping of metal panels that can be used for forming part of a structure. Page 1, column 1, lines 1-35. Thin sheet metal panels forming part of a structure subject to vibratory movements often vibrate in sympathy with the vibrations of the structure, leading to audible noise. Page 1, column 2, lines 5-30. Such noise can be damped with a sprayed insulation material. Page 1, column 2, lines 5-30. Smith teaches to insulate panels against vibration by applying insulation to specific, spaced areas of the panel. Page 1, column 2, line 40 through page 2, column 1, line 55. This reduces the weight of the applied material and the cost of the insulation. Page 1, column 2, line 40 through page 2, column 1, line 15. The vibrations are understood to vibrate outward from the center, and thus, insulation in applied to the center of the panel, as this is the point of maximum amplitude of vibration. Page 2, column 1, lines 10-55. Furthermore, the insulation is applied to areas outwardly from the center in a decreasingly thick manner somewhat corresponding to the decrease in amplitude of vibration which would otherwise be present. Page 2, column 1, lines 10-55. The areas of insulation can be applied in a multitude of different shapes and desires. Page 2, column 1, lines 10-55.

Hartsock teaches that in order to apply sound damping characteristics to a sheet metal manifold of stainless steel, a thermal spray coating (plasma or wire arc) can be applied. Column 2, lines 40-55 and column 3, lines 1-30. The coating can be a porous

coating of stainless steel or other suitable, compatible metal material. Column 3, lines 15-30.

Masumoto teaches that a desirable metal alloy with high damping characteristics for preventing vibration and noise pollution is an aluminum-silicon alloy. Column 1, lines 10-20. The alloy can be 0.3-30 wt% silicon, remainder aluminum. Column 1, lines 40-50. For example, the alloy can be 9 wt% silicon. Column 2, lines 65-68. Other examples, include 11 and 13 wt% silicon. Column 4, lines 25-35.

Kim teaches that it is well known to perform vibration analysis of articles using computer aided engineering. See column 1, lines 35-50. Kim shows testing of a rear body of a conventional vehicle with a rear wheel housing. Column 1, lines 10-50. Kim also refers to the vibration due to load input into the vehicle body while the body is running. Column 1, lines 10-50.

Cremers teaches that when using computer aided engineering for evaluating and optimizing the acoustic performance of structures it is important to be able to predict the acoustic radiation pattern of a vibrating structure, either from computed or measured surface vibrations (acoustic radiation prediction) and to have the ability to recover surface vibrations onto a vibrating structure from measured field sound pressure level. Paragraph [0006].

It is the Examiner's position that it is well known in the art to identify areas of specific vibration with a laser vibration scan. As applicant did not traverse this position

from the last Office Action (first provided in the Office Action of December 20, 2005), this position is considered agreed to.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the admitted state of the prior art to locate regions of the heat shield with maximum resonance (highest) vibrations and to apply a vibration damping coating to the heat shield in these areas as suggested by Smith in order to provide a lower weight and lower cost heat shield, because the admitted state of the prior art teaches a need for vibration damped heat shields of lower weight and lower cost, and Smith teaches that when vibration damping articles made from sheet metal it is desired to apply vibration damping coating to the area of highest vibration and to other spaced areas of vibrational problems, thus providing a coating of lower weight and lower cost as compared to a coating covering the entire surface. As it is taught to provide the coating to the area of highest vibration, it would be suggested that such areas must be located before coating. It would further have been obvious to modify the admitted state of the prior art in view of Smith to further provide the vibration damping coating as a porous metal alloy coating applied by thermal spraying of a stainless steel heat shield as suggested by Hartsock in order to provide a desirable vibration damping coating, because the admitted state of the prior art in view of Smith teaches to provide a vibration damping coating to specific areas of an article such as a sheet metal heat shield, and Hartsock teaches that a thermal spray coating of porous metal alloy provides desirable vibration damping on sheet metal articles, and that such

sheet metal can desirably be stainless steel. It would further have been obvious to modify the admitted state of the prior art in view of Smith and Hartsock to provide the metal alloy is Al-Si, such as Al-Si 11 or 13 wt% as suggested by Masumoto, in order to provide a desirable vibration damping, as the admitted state of the prior art in view of Smith and Hartsock teaches to provide a vibration damping coating to specific areas of an article such as a heat shield by thermal spray a porous metal alloy coating, and Masumoto teaches that a desirable vibration damping coating can be an Al-Si alloy, such as Al-Si 11 or 13 wt%. Given the range of teaching of Masumoto, it would be expected that a desirable coating could also be about 12 wt% Si, as the range from 11-13 wt% Si is taught. It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify the admitted state of the prior art in view of Smith, Hartsock and Masumoto to perform identification of vibration regions using computer aided engineering with laser scanning or sound pressure recording of a heat shield attached to a catalytic converter in the exhaust system of an engine while running the engine as suggested by Kim and Cremers, in order to find the desired areas for coating, because the admitted state of the prior art in view of Smith, Hartsock and Masumoto teaches to provide vibration damping coating on specific areas of an article, including of maximum (highest) vibration, and Kim teaches that computer aided engineering is a well known way performing vibrational analysis of vehicle components and Cremers teaching that when performing computer aid engineering of a vibrating structure it is known to use measured vibrations including field sound

pressure level (sound pressure recording), which would indicate the "field measurement" or measurement in use (that is, in a running engine in this case) to get desirable measurements and it is further the Examiner's position that laser scanning is another well known way of identifying vibrational regions.

Response to Arguments

10. Applicant's arguments filed February 8, 2007 have been fully considered but they are not persuasive.

As to the 35 USC 103 rejection, the Examiner has reviewed applicant's arguments at pages 6-8 of the February 8, 2007 amendment, however, the rejection is maintained. Applicant again only argues the features of Kim and Cremers, and thus the Examiner understands that applicant agrees with her positions regarding the admitted state of the prior art, Smith, Hartsock and Masumoto. Kim and Cremers have been cited as to the obvious ness of identifying the vibration regions using computer aided engineering with laser scanning or sound pressure recording of a heat shield attached to a catalytic converter in the exhaust system of an engine while running the engine (see the rejection above). The Examiner has cited Kim as providing that computer aided engineering is a well known way of performing vibrational analysis of vehicle components. Applicant argues that Kim does not provide measurement in use, but rather uses a mathematical model to analyze and further is concerned with a different treatment of the vehicle components than the spray system of vibration damping material used in the present

application. However, the Examiner has not cited Kim as teaching the spraying of vibration damping materials to reduce vibration as presently claimed. Rather Kim merely that it is known to perform vibrational analysis using computer aided engineering. The other cited references to the admitted state of the prior art, Smith, Hartsock and Masumoto all show the desire to provide the spraying of vibration damping materials to reduce vibration to the areas of highest vibration. It is clear that to perform this process, the areas of highest vibration must be determined so that they can be treated. Kim is cited as to a known method of determining a vibration analysis is by using computer aided engineering. Although Kim does not disclose determining the vibration levels and measuring vibrations while the vehicle is operated, the Examiner has cited Cremers as to the position that when performing computer aid engineering of a vibrating structure it is known to use measured vibrations including field sound pressure level (sound pressure recording), which would indicate the "field measurement" or measurement in use (that is, in a running engine in this case) to get desirable measurements. The combination of Kim and Cremers, along with the other cited references, provides the suggestion to perform field measurement (that is, measurement in use in a running engine) when measuring vibrations in a structure which would be vehicle components. Cremers shows that "computer aided engineering" does not mean that "field measurements" cannot be taken, but rather would be inclusive of field measurements. The mere fact that the claims do not refer to a term such as "computer aided engineering" does not mean that the claims cannot read

on a process that does use the term. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Here applicant has made no arguments against the combination of references, merely arguments against two references (Kim and Cremers) individually. As is fully discussed in the rejection above, it is the combination of all cited references (the admitted state of the prior art, Smith, Hartsock, Masumoto, Kim and Cremers) that suggests the claimed invention.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date

of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KATHERINE BAREFORD
PRIMARY EXAMINER